REMARKS

In the Office Action, the Examiner rejected claims 53-61 and 71-75. Applicants canceled claims 1-52, 62-70, and 76-83 in previous communications. By the present Response, Applicants amend claims 53-61 to further clarify the claimed subject matter. Upon entry of the amendments, claims 53-61 and 71-75 will remain pending in the present patent application. Applicants respectfully request reconsideration of the above-referenced application in view of the foregoing amendments and the following remarks.

Rejections Under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 53, 57, 58, 71, 72, and 74 under 35 U.S.C. § 102(b) as anticipated by Hamilton et al. (U.S. Patent No. 5,801,442). Applicants respectfully traverse this rejection.

Legal Precedent

Anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Moreover, the prior art reference also must show the *identical* invention "*in as complete detail as contained in the ... claim*" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). Accordingly, Applicants need only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter.

Omitted Features of Independent Claim 53

Turning now to the present claims, the Hamilton et al. reference fails to disclose each element of independent claim 53. For instance, independent claim 53 recites "a backplane configured to receive and circulate a coolant stream for extraction of heat" and

first and second power converter modules secured to and cooled by the backplane. Independent claim 53 further recites that these power converter modules are configured "to be plugged into the backplane" and to convert input power into first and second output powers, respectively, that have different characteristics from each other. Because the Hamilton et al. reference fails to disclose each of these elements, the cited reference fails to anticipate independent claim 53.

The Hamilton et al. reference is generally directed to a technique for convectively cooling semiconductor devices. Col. 1, lines 7-11. To this end, the Hamilton et al. reference teaches the incorporation of small fluid channels into semiconductor devices, allowing fluid to pass through the channels to extract heat from the devices. Col. 1, line 64 – col. 2, line 1; col. 6, line 59 – col. 7, line 11; FIG. 13A. In one disclosed embodiment, the Hamilton et al. reference teaches a ceramic substrate 24" having an inlet manifold 104 and outlet manifold 110 for circulating fluid through the substrate 24". Col. 7, lines 3-10. A three-phase IGBT power bridge module, having six IGBT dies 20" and six diodes 21, is secured to the substrate 24". Col. 6, lines 59-64. The IGBTs 20" and diodes 21 have inlet ports 86 and 98, respectively, and outlet ports 90 and 100, respectively, which allow fluid to flow through these devices. *See c*ol. 6, line 64 – col. 7, line 1; FIG. 13A.

In the Office Action, the Examiner equated the ceramic substrate 24" of the Hamilton et al. reference with the formerly recited thermal support of claim 53. While Applicants do not necessarily agree with this comparison, Applicants amended the claims to further clarify the claimed subject matter. Particularly, Applicants note that, as amended, independent claim 53 recites a backplane, a "first power converter module ... configured to be plugged into the backplane," and a "second power converter module ... configured to be plugged into the backplane." As a preliminary matter, Applicants respectfully submit that the terms "backplane" and "module" carry certain meanings to one of ordinary skill in the relevant art. Applicants further submit that the ceramic

substrate 24" and the six IGBT devices, which include IGBTs 20" and diodes 21, of the Hamilton et al. reference would not be considered to be a "backplane" or individual "modules" by one of such skill. In other words, characterization of the substrate 24" and IGBT devices of the Hamilton et al. reference as a "backplane" and "modules," respectively, would be beyond the broadest *reasonable* interpretation that would be given by one of ordinary skill in the art.

However, even assuming for the sake of argument that one skilled in the art *might* consider such a comparison reasonable, independent claim 53 clearly recites, as noted above, that the first and second power converter modules are each "configured to be plugged into a backplane." While the reference does teach bolting and brazing various components together, it fails to disclose, or even hint at, plugging modular components into a backplane. Still further, the reference appears to be silent as to the power outputted by such devices having characteristics different than one another, as also recited by the present claim. As such, the Hamilton et al. reference fails to disclose these elements and, consequently, fails to anticipate independent claim 53 or its dependent claims.

Omitted Features of Independent Claim 71

Further, the Hamilton et al. reference also fails to disclose each element of independent claim 71. For instance, independent claim 71 recites "a backplane for routing *electrical power* and thermal energy" (emphasis added). Because the Hamilton et al. reference fails to disclose each and every element, the cited reference fails to anticipate independent claim 71.

As discussed above, the Hamilton et al. reference discloses a plurality of IGBT dies 20" and a plurality of diodes 21 secured to a ceramic substrate 24". In the Office Action, the Examiner suggested that this ceramic substrate 24" is a "backplane for routing electrical power." *See* Office Action mailed June 6, 2005, page 2. While the ceramic substrate 24" may route *thermal* energy from the attached IGBTs 20 and diodes 21, the

reference fails to disclose that substrate 24" routes *electrical power* to these semiconductor components. Indeed, the cited reference does not suggest that ceramic substrate 24" is even capable of serving in this capacity, as the reference is directly concerned with thermal conduction, not electrical conduction. The Hamilton et al. substrate does not route electrical power and, therefore, cannot be reasonably equated with the "backplane for routing electrical power" recited by independent claim 71. Consequently, as the cited reference fails to disclose each and every element of the present claim, the Hamilton et al. reference fails to anticipate independent claim 71 and its dependent claims.

For these reasons, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 102 and allowance of claims 53, 57, 58, 71, 72, and 74.

Rejections Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 54-56, 61, and 73-75 under 35 U.S.C. § 103(a) as unpatentable over Hamilton et al. The Examiner also rejected claims 59 and 60 over Hamilton et al. in view of Research Disclosure Publication No. RD 4171012A. Applicants respectfully traverse these rejections.

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex*

parte Clapp, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

Omitted Features of the Dependent Claims

Applicants note that each of claims 54-56, 59-61, and 73-75 depends from one of independent claims 53 or 71. As discussed above, the Hamilton et al. reference fails to disclose each element of independent claims 53 and 71. Further, neither the Examiner's arguments regarding design choice nor Research Disclosure Publication No. RD 4171012A obviate the deficiencies of the Hamilton et al. reference. As a result, dependent claims 54-56, 59-61, and 73-75 are allowable on the basis of their dependency from a respective allowable independent claim, as well as for the subject matter separately recited in these dependent claims. Accordingly, Applicants respectfully request withdrawal of the Examiner's rejection and allowance of claims 54-56, 59-61, and 73-75.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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